

Appl. No. 09/903,217
Amd. Dated May 24, 2005
Reply to Office Action of March 30, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for computing a primary path within a mixed protection domain network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node, the method comprising:

identifying a plurality of potential paths which are characteristically similar, each of the plurality of potential paths which are characteristically similar having at least one similar protection characteristic and being arranged between the source node and the destination node;

selecting a first potential path from the plurality of potential paths which are characteristically similar; [[and]]

identifying a second potential path for use as an actual path between the source node and the destination node, the second potential path being characteristically different and having at least one different protection characteristic from the first potential path; and

[[considering]] comparing the first potential path with the second potential path for use as the [[an]] actual path between the source node and the destination node, wherein other potential paths included in the plurality of potential paths which are characteristically similar are not considered for use as the actual path between the source node and the destination node.

Claim 2 (currently amended): The [[A]] method as recited in claim 1 wherein selecting the first potential path from the plurality of potential paths includes:

determining a cost of each potential path of the plurality of potential paths which are characteristically similar, wherein the cost of the first potential path is lower than the cost of substantially all other potential paths included in the plurality of potential paths.

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Claim 3 (canceled)

Claim 4 (currently amended): The [[A]] method as recited in claim 1 further including: 3 wherein considering the first potential path for use as the actual path between the source node and the destination node includes:

~~comparing the first potential path with the second potential path; and~~

selecting one of the first potential path and the second potential path for use as the actual path.

Claim 5 (currently amended): The [[A]] method as recited in claim 4 wherein comparing the first potential path with the second potential path includes comparing a cost of the first potential path with a cost of the second potential path, and selecting one of the first potential path and the second potential path for use as the actual path includes selecting the first potential path for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and selecting the second potential path for use as the actual path when the cost of the second potential path is lower than the cost of the first potential path.

Claim 6 (currently amended): The [[A]] method as recited in claim 1 further including:

identifying substantially all potential paths arranged between the source node and the destination node.

Claim 7 (currently amended): The [[A]] method as recited in claim 6 wherein identifying substantially all the potential paths includes:

selecting a first link, the first link being arranged between the source node and a first node included in the plurality of nodes;

selecting a second link, the second link being associated with the first node; and

determining when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to a potential path.

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Claim 8 (currently amended): The [[A]] method as recited in claim 7 wherein the first link and the second link form a potential path segment, and determining when the first link and the second link are protectable includes determining when an alternate potential path segment associated with the source node and the first node exists for the potential path segment.

Claim 9 (currently amended): The [[A]] method as recited in claim 1 wherein the plurality of potential paths which are characteristically similar have similar protection characteristics.

Claim 10 (currently amended): The [[A]] method as recited in claim 9 wherein the plurality of potential paths have the same protection configuration.

Claim 11 (currently amended): A computer program product for computing a primary path within a mixed protection domain network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node, the computer program product comprising:

computer code that causes a plurality of potential paths which are characteristically similar to be identified, each of the plurality of potential paths which are characteristically similar having at least one similar protection characteristic and being arranged between the source node and the destination node;

computer code that causes a first potential path to be selected from the plurality of potential paths which are characteristically similar;

computer code that causes a second potential path for use as an actual path between the source node and the destination node to be identified, the second potential path being characteristically different and having at least one different protection characteristic from the first potential path;

computer code that causes the first potential path and the second potential path to be considered for use as the [[an]] actual path between the source node and the destination node, wherein other potential paths included in the plurality of potential paths

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which are characteristically similar are not considered for use as the actual path between the source node and the destination node; and

a computer-readable medium that stores the computer codes.

Claim 12 (currently amended): The [[A]] computer program product according to claim 11 wherein the computer code that causes the first potential path to be selected from the plurality of potential paths includes:

computer code that causes a cost of each potential path of the plurality of potential paths which are characteristically similar to be determined, wherein the cost of the first potential path is lower than the cost of substantially all other potential paths included in the plurality of potential paths.

Claim 13 (canceled)

Claim 14 (currently amended): The [[A]] computer program product according to claim 11 further including: ~~13 wherein the computer code that causes the first potential path to be considered for use as the actual path between the source node and the destination node includes:~~

~~computer code that causes the first potential path to be compared with the second potential path; and~~

computer code that causes one of the first potential path and the second potential path to be selected for use as the actual path.

Claim 15 (currently amended): The [[A]] computer program product according to claim 14 wherein the computer code that causes the first potential path to be compared with the second potential path includes computer code that causes a cost of the first potential path to be compared with a cost of the second potential path, and the computer code that causes one of the first potential path and the second potential path to be selected for use as the actual path includes computer code that causes the first potential path to be selected for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and computer code that causes the second

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potential path to be selected for use as the actual path when the cost of the second potential path is lower than the cost of the first potential path.

Claim 16 (currently amended): The [[A]] computer program product according to claim 11 further including:

computer code that causes substantially all potential paths arranged between the source node and the destination node to be identified.

Claim 17 (currently amended): The [[A]] computer program product according to claim 16 wherein the computer code that causes substantially all the potential paths to be identified includes:

computer code that causes a first link to be selected, the first link being arranged between the source node and a first node included in the plurality of nodes;

computer code that causes a second link to be selected, the second link being associated with the first node; and

computer code that causes a determination to be made regarding when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to a potential path.

Claim 18 (currently amended): The [[A]] computer program product according to claim 17 wherein the first link and the second link form a potential path segment, and the computer code that causes the determination to be made regarding when the first link and the second link are protectable includes computer code that causes a determination to be made regarding when an alternate potential path segment associated with the source node and the first node exists for the potential path segment.

Claim 19 (currently amended): The [[A]] computer program product according to claim 11 wherein the computer-readable medium is one selected from the group consisting of a hard disk, a CD-ROM, a DVD, a computer disk, a tape drive, a computer memory, and a data signal embodied in a carrier wave.

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Claim 20 (currently amended): The [[A]] computer program product according to claim 11 wherein the plurality of potential paths which are characteristically similar have similar protection characteristics.

Claim 21 (currently amended): An apparatus for computing a primary path within a mixed protection domain network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node, the apparatus comprising:

computer code that causes an identification of a first potential path and a second potential path, the first potential path and the second potential path each being arranged between the source node and the destination node, the first potential path and the second potential path being characteristically similar in that the first potential path and the second potential path have at least one similar protection characteristic;

computer code that causes a selection of the first potential path;

computer code that causes a third potential path between the source node and the destination node to be identified as being characteristically different and having at least one different protection characteristic from the first potential path and the second potential path;

computer code that causes a comparison [[consideration]] of the first potential path with the third potential path for use as an actual path between the source node and the destination node, wherein the second potential path is not considered for use as the actual path between the source node and the destination node;

a computer-readable medium that stores the computer codes; and

a processor that executes the computer codes.

Claim 22 (currently amended): The [[An]] apparatus according to claim 21 wherein the computer code that causes the selection of the first potential path includes:

computer code that causes a determination of a cost of the first potential path and a cost of the second potential path, wherein the first potential path is selected when the cost of the first potential path is less than the cost of the second potential path.

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Claim 23 (canceled)

Claim 24 (currently amended): The [[An]] apparatus according to claim 21 further including: 23 wherein the computer code that causes a consideration of the first potential path for use as the actual path between the source node and the destination node includes:

~~computer code that causes a comparison of the first potential path to the third potential path; and~~

computer code that selects one of the first potential path and the third potential path for use as the actual path.

Claim 25 (currently amended): The [[An]] apparatus according to claim 24 wherein the computer code that causes a comparison of the first potential path to the third potential path includes computer code that causes a comparison of a cost of the first potential path with a cost of the third potential path, and the computer code that causes a selection of one of the first potential path and the third potential path for use as the actual path includes computer code that causes a selection the first potential path for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and the computer code that causes a selection of the third potential path for use as the actual path when the cost of the third potential path is lower than the cost of the first potential path.

Claim 26 (currently amended): The [[An]] apparatus according to claim 21 further including:

computer code that causes an identification of substantially all potential paths arranged between the source node and the destination node.

Claim 27 (currently amended): The [[An]] apparatus according to claim 21 wherein the computer code that causes the identification of the first potential path includes:

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computer code that causes a selection of a first link, the first link being arranged between the source node and a first node included in the plurality of nodes;

computer code that causes a selection of a second link, the second link being associated with the first node; and

computer code that causes a determination of when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to the first potential path.

Claim 28 (currently amended): The [[An]] apparatus according to claim 27 wherein the first link and the second link form a potential path segment, and the computer code that causes the determination of when the first link and the second link are protectable includes computer code that causes a determination of when an alternate potential path segment associated with the source node and the first node exists for the potential path segment.

Claim 29 (currently amended): An apparatus for computing a primary path within a mixed protection domain network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node, the apparatus comprising:

means for identifying a first potential path and a second potential path, the first potential path and the second potential path each being arranged between the source node and the destination node, the first potential path and the second potential path being characteristically similar having at least one similar protection characteristic;

means for selecting the first potential path;

means for identifying a third potential path for use as an actual path between the source node and the destination node, the third potential path being characteristically different and having at least one different protection characteristic from the first potential path and from the second potential path; and

means for comparing [[considering]] the first potential path with the third potential path for use as an actual path between the source node and the destination node,

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wherein the second potential path is not considered for use as the actual path between the source node and the destination node.

Claim 30 (currently amended): The [[An]] apparatus according to claim 29 wherein the means for selecting the first potential path includes:

means for determining a cost of the first potential path and a cost of the second potential path, wherein the first potential path is selected when the cost of the first potential path is less than the cost of the second potential path.

Claim 31 (canceled)

Claim 32 (currently amended): The [[An]] apparatus according to claim 29 ~~31 wherein the means for considering the first potential path for use as the actual path between the source node and the destination node includes:~~

~~means for comparing the first potential path to the third potential path; and~~

means for selecting one of the first potential path and the third potential path for use as the actual path.

Claim 33 (currently amended): The [[An]] apparatus according to claim 32 wherein the means for comparing the first potential path to the third potential path includes means for comparing a cost of the first potential path with a cost of the third potential path, and the means for selecting one of the first potential path and the third potential path for use as the actual path includes means for selecting the first potential path for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and the means for selecting the third potential path for use as the actual path when the cost of the third potential path is lower than the cost of the first potential path.

Claim 34 (currently amended): The [[An]] apparatus according to claim 29 wherein the means for identifying the first potential path includes:

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means for selecting a first link, the first link being arranged between the source node and a first node included in the plurality of nodes;

means for selecting a second link, the second link being associated with the first node; and

means for determining when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to the first potential path.

Claim 35 (currently amended): The [[An]] apparatus according to claim 34 wherein the first link and the second link form a potential path segment, and the means for determining when the first link and the second link are protectable includes means for determining when an alternate potential path segment associated with the source node and the first node exists for the potential path segment.

Claim 36 (currently amended): A method for computing a primary path within a network with a mixed protection domain, the network including a plurality of nodes, the method comprising:

identifying a plurality of potential paths which begin at a first node and end at a second node, the plurality of potential paths including a first set of potential paths that have a first protection characteristic and a second set of potential paths that have a second protection characteristic;

selecting a first potential path from the first set of potential paths;

selecting a second potential path from the second set of potential paths; and

identifying a path for use in transferring a signal between the first node and the second node, the path for use in transferring the signal being identified from a third set of potential paths which includes the first potential path and the second potential path and substantially no other potential paths included in the first set of potential paths and the second set of potential paths.

Claim 37 (currently amended): The [[A]] method as recited in claim 36 wherein selecting the first potential path from the first set of potential paths includes:

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determining costs associated with each potential path from the first set of potential paths, wherein a cost associated with the first potential path is lower than the costs associated with other potential paths in the first set of potential paths.

Claim 38 (currently amended): The [[A]] method as recited in claim 36 wherein selecting the second potential path from the second set of potential paths includes:

determining costs associated with each potential path from the second set of potential paths, wherein a cost associated with the second potential path is lower than the costs associated with other potential paths in the second set of potential paths.

Claim 39 (currently amended): The [[A]] method as recited in claim 36 wherein identifying the path for use in transferring the signal includes:

evaluating a cost associated with each potential path in the third set of potential paths, wherein a potential path included in the third set of potential paths has an associated cost that is lower than costs associated with other potential paths included in the third set of potential paths, the potential path is identified as the path for use in transferring the signal.

Claim 40 (currently amended): The [[A]] method as recited in claim 36 wherein substantially each potential path included in the third set of potential paths has [[is characteristically]] different protection characteristics from substantially every other potential path included in the third set of potential paths.

Claim 41 (currently amended): A [[An]] computer program product for computing a primary path within a network with a mixed protection domain, the network including a plurality of nodes, the computer program product comprising:

computer code that causes an identification of a plurality of potential paths which begin at a first node and end at a second node, the plurality of potential paths including a first set of potential paths that have a first protection characteristic and a second set of potential paths that have a second protection characteristic;

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computer code that causes a selection of a first potential path from the first set of potential paths;

computer code that causes a selection of second potential path from the second set of potential paths;

computer code that causes an identification of a path for use in transferring a signal between the first node and the second node, the path for use in transferring the signal being identified from a third set of potential paths which includes the first potential path and the second potential path and substantially no other potential paths included in the first set of potential paths and the second set of potential paths; and

a computer-readable medium that stores the computer codes.

Claim 42 (currently amended): The [[A]] computer program product as recited in claim 41 wherein the computer code that causes the selection of the first potential path from the first set of potential paths includes:

computer code that causes a determination of costs associated with each potential path from the first set of potential paths, wherein a cost associated with the first potential path is lower than the costs associated with other potential paths in the first set of potential paths.

Claim 43 (currently amended): The [[A]] computer program product as recited in claim 41 wherein the computer code that causes the selection of the second potential path from the second set of potential paths includes:

computer code that causes a determination of costs associated with each potential path from the second set of potential paths, wherein a cost associated with the second potential path is lower than the costs associated with other potential paths in the second set of potential paths.

Claim 44 (currently amended): The [[A]] computer program product as recited in claim 41 wherein the computer code that causes an identification of the path for use in transferring the signal includes:

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computer code that causes an evaluation of a cost associated with each potential path in the third set of potential paths, wherein a potential path included in the third set of potential paths has an associated cost that is lower than costs associated with other potential paths included in the third set of potential paths, the potential path is identified as the path for use in transferring the signal.

Claim 45 (currently amended): The [[A]] computer program product as recited in claim 41 wherein substantially each potential path included in the third set of potential paths is characteristically different from substantially every other potential path included in the third set of potential paths in that each potential path had different protection characteristics.

Claim 46 (currently amended): An apparatus for computing a primary path within a network with a mixed protection domain, the network including a plurality of nodes, the apparatus comprising:

means for identifying a plurality of potential paths which begin at a first node and end at a second node, the plurality of potential paths including a first set of potential paths that have a first protection characteristic and a second set of potential paths that have a second protection characteristic;

means for selecting a first potential path from the first set of potential paths;

means for selecting a second potential path from the second set of potential paths;

and

means identifying a path for use in transferring a signal between the first node and the second node, the path for use in transferring the signal being identified from a third set of potential paths which includes the first potential path and the second potential path and substantially no other potential paths included in the first set of potential paths and the second set of potential paths.

Claim 47 (currently amended): The [[An]] apparatus as recited in claim 46 wherein the means for selecting the first potential path from the first set of potential paths includes:

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means for determining costs associated with each potential path from the first set of potential paths, wherein a cost associated with the first potential path is lower than the costs associated with other potential paths in the first set of potential paths.

Claim 48 (currently amended): The [[An]] apparatus as recited in claim 46
wherein the means for selecting the second potential path from the second set of potential paths includes:

means for determining costs associated with each potential path from the second set of potential paths, wherein a cost associated with the second potential path is lower than the costs associated with other potential paths in the second set of potential paths.

Claim 49 (currently amended): The [[An]] apparatus as recited in claim 46
wherein the means for identifying the path for use in transferring the signal includes:

means for evaluating a cost associated with each potential path in the third set of potential paths, wherein a potential path included in the third set of potential paths has an associated cost that is lower than costs associated with other potential paths included in the third set of potential paths, the potential path is identified as the path for use in transferring the signal.

Claim 50 (currently amended): The [[An]] apparatus as recited in claim 46
wherein substantially each potential path included in the third set of potential paths is characteristically different from substantially every other potential path included in the third set of potential paths in that each potential path has different protection characteristics.

Claim 51 (currently amended): The [[An]] apparatus as recited in claim 46
further including:

means for placing the first potential path and the second potential path in the third set of potential paths.

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Claim 52 (new): The method of claim 36 wherein the first protection characteristic is different from the second protection characteristic.

Claim 53 (new): The computer program product of claim 41 wherein the first protection characteristic is different from the second protection characteristic.

Claim 54 (new): The apparatus of claim 46 wherein the first protection characteristic is different from the second protection characteristic.